

1 ABSTRACT (J.T. Lin)

2 A method and surgical technique for corneal reshaping and for presbyopia correction are
 3 ^{provided} disclosed. The ~~disclosed~~ preferred embodiments of the system consists of a scanner, a beam
 4 spot controller and coupling fibers and the basic laser having a wavelength of (190-310) nm,
 5 (0.5-3.2) microns and (5.6-6.2) microns and a pulse duration of about (10-150) nanoseconds
 6 (10-500) microseconds and true continuous wave. New mid-infrared gas lasers are ^{provided} ~~disclosed~~ for
 7 the corneal reshaping procedures. Presbyopia is treated by a method which uses ablative laser to
 8 ablate the ^{sclera tissue} ~~sclera ciliary tissue~~ and increase the accommodation of the ciliary body. The tissue
 9 bleeding is prevented by a dual-beam system having ablative and coagulation lasers. The
 10 preferred embodiments ~~of the present invention~~ include short pulse ablative lasers (pulse
 11 duration less than 200 microseconds) with wavelength range of (0.15 -3.2) microns and the long
 12 pulse (longer than 200 microseconds) coagulative lasers at (0.5 - 10.6) microns. Compact diode
 13 lasers of (980-2100) nm and diode-pumped solid state laser at about 2.9 microns for radial
 14 ablation patterns on the sclera ciliary body of a cornea are also disclosed for presbyopia
 15 correction using the mechanism of sclera expansion.

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